Journal of Global Security Studies, 8(4), 2023, ogad018
https://doi.org/10.1093/jogss/ogad018
Research Article

The Political Economy of Australian Militarism: On the Emergent Military–Industrial–Academic Complex

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Abstract

Australia is undergoing a process of substantial militarization. This article argues that one of the key forces underpinning Australia's militarization is an emergent military–industrial–academic complex (MIAC), comprised of increasingly close relationships between universities, defense, and defense industry. The connections between the three have rapidly intensified since 2016 due to changes in defense industry policy, pessimism regarding the strategic environment, the ongoing malaise of the neoliberal university, and the motivations of key individuals. This article demonstrates that each of the three groups is actively seeking closer relationships with the other, driven by a patchwork of competing economic and strategic motivations, and powered by ideals of innovation and the entrepreneurial spirit. Each needs the other—for military advantage, for profits, and for survival. Australia's emergent but rapidly expanding MIAC raises concerns about the pace, nature, and necessity of Australia's militarization, the impact on the role of the university in society, and the hollowness of Australian strategic policy. Furthermore, it has substantial implications for strategic competition in the Indo-Pacific, Australia's alliances, and the Australia-UK-US (AUKUS) partnership.

Resumen

Australia está pasando por un proceso sustancial en materia de militarización. Este artículo argumenta que una de las fuerzas clave que sustentan la militarización de Australia es un emergente complejo militar-industrial-académico (MIAC, por sus siglas en inglés), que está compuesto por relaciones, cada vez más estrechas, entre las universidades, las fuerzas armadas y la industria de la defensa. Las conexiones entre estos tres sectores se han intensificado rápidamente desde 2016 debido a: los cambios en la política por parte de la industria de la defensa, el pesimismo con respecto al entorno estratégico, el malestar continuo de la universidad neoliberal y las motivaciones de ciertas personas clave. Este artículo demuestra que cada uno de los tres grupos está buscando de manera activa lograr relaciones más estrechas con el otro, dirigidos por un mosaico de motivaciones económicas y estratégicas que compiten entre ellas, e impulsados por ideales de innovación y espíritu emprendedor. Cada uno de estos grupos necesita al otro para obtener ventajas militares y beneficios y también por supervivencia. El complejo militar-industrial-académico de Australia, aún emergente, pero en rápida expansión, plantea preocupaciones sobre el ritmo, la naturaleza y la necesidad de la militarización de Australia,

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Troath, Sian (2023) The Political Economy of Australian Militarism: On the Emergent Military–Industrial–Academic Complex. *Journal of Global Security Studies*, https://doi.org/10.1093/jogss/ogad018
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así como sobre el impacto en el papel de la universidad dentro de la sociedad y el vacío de la política estratégica australiana. Además, esto tiene implicaciones sustanciales para la competencia estratégica en el Indo-Pacífico, en las alianzas de Australia y en la asociación AUKUS.

Résumé

L'Australie connaît actuellement une militarisation importante. Cet article affirme que l'une des forces clés derrière la militarisation de l'Australie est l'émergence d'un complexe militaire, industriel et académique (CMIA), formé par les relations de plus en plus étroites entre les universités, la défense et l'industrie de la défense. Ces liens qui unissent les trois se sont rapidement intensifiés depuis 2016 à cause de l'évolution de la politique relative au secteur de la défense, du pessimisme quant à l'environnement stratégique, du malaise persistant de l'université néolibérale et des motivations de personnes clés. Cet article démontre que chacun des trois groupes recherche activement à renforcer ses relations avec les autres, pour des motifs économiques et stratégiques contradictoires mais interreliés, et des idéaux d'innovation et d'esprit entrepreneurial. Chacun a besoin des autres; que ce soit pour un avantage militaire, le profit ou la survie. L'émergence et l'expansion rapide du complexe militaire, industriel et académique de l'Australie soulèvent des préoccupations quant au rythme, à la nature et la nécessité de la militarisation australienne, aux conséquences sur le rôle de l'université au sein de la société et au manque de substance de la politique stratégique australienne. En outre, elles s'accompagnent d'importantes implications pour la compétition stratégique dans l'Indopacifique, les alliances de l'Australie et le partenariat AUKUS.

Keywords: military–industrial–academic complex, Australia, defense industry, militarism, military–industrial complex, Australian defense policy
Palabras clave: complejo militar-industrial-académico, Australia, industria de defensa, militarism, complejo militar-industrial, política de defensa Australiana
Mots clés: complexe militaire, industriel et académique, Australie, secteur de la défense, militarisme, complexe militaire et industriel, politique de défense australienne

Introduction

Australia is embarking upon its largest ever peacetime buildup of military capability. Underlying this process of militarization is an increasingly close triangular relationship between universities, defense, and defense industry. Since 2016, the connections between the three have rapidly intensified due to a shake-up of defense industry, an increasingly pessimistic strategic outlook, and the ongoing malaise of the neoliberal university. Australian universities have become enmeshed in the militarism of the Australian state. They are increasingly being viewed as a military asset, whose purpose is to produce a future workforce for defense and provide the research and development (R&D) required to underpin Australian military advantage. Underfunded universities and academics whose positions rely on successful grant income are turning, more and more often, to the funds available from defense and defense industry. Defense industry considers working with an expanded pool of available research expertise, in collaboration with defense, as a gateway to growth. The Australian government sees both strategic and economic values in militarization. Strategic value lies in enhanced capabilities, and greater integration with allies and partners. Economic value lies in the hope of leveraging economic growth from local defense industry, beneficial spillover of developments from defense industry into civilian industries, and the economic boost that would come from becoming a leading defense exporter. As Australia becomes more militarized, the dynamics contained within this triangular relationship are strengthening as networks expand and deepen. Australia has an expanding military–industrial–academic complex (MIAC), and it is rapidly becoming a behemoth.

Interest in the nature and developments of the military–industrial complex is not new. However, the Australian MIAC has received limited attention, and warrants further analysis. Existing research on various forms of a military–industrial complex is heavily centered on the United States, and to a lesser extent the United Kingdom and Europe (e.g., Der Derian 2001; Hayes,

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Rowlands, and Buston 2009; Ledbetter 2011; Hayes 2012; Smith 2015; Smart 2016; Gholz and Sapolsky 2021). Broadening the remit for case studies is valuable in beginning to contest the US-centric nature of international relations (Avant et al. 2019). Further, Australia makes for an interesting and necessary case to examine, given its geostrategic position and increasingly significant role in US–China competition in the Indo-Pacific, its membership of AUKUS, and the aims of expanding interoperability between the three AUKUS states. Indeed, the three states have outlined their commitment to "intensify" their engagements with defense industry and academia to advance "trilateral capability development" (U.S. Department of Defense 2022). We know there is a political economy to alliance politics (Zielinski and Poast 2021), and when it comes to AUKUS and its role in great power competition, Australia's role requires further examination. While the geopolitical drivers of AUKUS have dominated the conversation, the domestic and transnational political economy factors must also be considered. The patchwork of overlapping and competing economic and strategic interests driving Australia's militarization is a key component of Australia's approach to its security and alliance relationships, and thus to how the AUKUS partnership will develop. The nature of Australia's MIAC will have strategic implications for its allies and partners, and for regional competition and conflict in the Indo-Pacific.

In this article, I will unpick the dynamics underpinning the growing integration between defense, defense industry, and academia, in order to better understand the nature of Australia's militarization. There has been a clear and significant shift in Australia's MIAC since 2016, influenced by economic and strategic factors that feed the "symbiotic" relationship between neoliberalism and militarism (Smart 2016). It is for these very reasons that Richardson (2022, 134–5) makes the call for academics to map the flows of money between these spaces. In this article, I begin to answer that call. I aim to expand our understanding not only of Australia's MIAC but also of the impact of a state's defense industry and associated policies on its security outlook and regional security relationships. The aim of this article is not to be a theoretical reflection on what constitutes an MIAC, but I do intend for this detailed examination of Australia's MIAC to provide a new case study that can be used in future theoretical and comparative research on the nature of military–industrial complexes.

In this article, I focus on the Australian case and seek to answer the following questions: What changes have taken place in relations between government, defense industry, and academia since 2016? Why have they taken place, who has been involved, and what justifications have been given? Finally, what are the preconditions and contextual circumstances that have contributed to these changes? To answer these questions, I first explore the literature on the military–industrial complex, followed by the specifics of the Australian context. I then step through each of defense, defense industry, and academia in detail to explore the ways in which they are working to build closer relationships with one another, and what motivations are driving these ambitions. Finally, I conclude with reflections on what these changes mean for Australia and for strategic affairs in the Indo-Pacific, arguing that the ongoing fusion of defense, universities, and industry creates risks for universities, for democracy, and for effective strategic policy.

The Political Economy of Militarism: The MIAC

Academia is not the most common inclusion in explorations of the military–industrial complex. Yet in the Australian case, it is currently an essential component and, historically, academia has been embedded in the concept of the military–industrial complex from the beginning. The term military–industrial complex was famously coined by Eisenhower in his 1961 farewell speech. He warned of the "unwarranted influence, whether sought or unsought, by the military–industrial complex" (Eisenhower 1961). Eisenhower, however, originally considered using the term MIAC (Giroux 2007, 15). It was not only the influence of the military–industrial complex on politics that concerned him but also the influence on universities. In the United States in the 1950s and 1960s, government defense funding made up an increasing proportion of the funding for university research (Ledbetter 2011, 10). Despite dropping the term, the importance Eisenhower (1961) placed on the role of academia remained in his speech:

> The free university, historically the fountainhead of free ideas and scientific discovery, has experienced a revolution in the conduct of research. Partly because of the huge costs involved, a government contract becomes virtually a substitute for intellectual curiosity. . . The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present and is gravely to be regarded.

Australian history also reveals the need to include academia in the analysis of the military–industrial complex. Universities were, for instance, heavily involved in

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the war effort during the Second World War in ways that had significant implications for the role of the university in society and within the economy (Forsyth 2012, 55–66). This history also serves to reiterate that these connections are not new, but we do need to understand their current forms and present-day implications.

The US case is the most heavily studied, and how its military–industrial complex has changed over time has been well documented. From a period of waning following the Vietnam War came Reagan's "Star Wars" initiative, the emergence of neoliberal economics, and "military Keynesianism" in the 1980s (Smart 2016, 463–4). The changes brought by the War on Terror led scholars to argue that the military–industrial complex had been replaced with a national security state (Smith 2015). In the United States, Giroux (2008, 58) argues it was "only in the aftermath of 9/11 that the university has also become an intense site of militarization." Not only did a process of militarization take place, but this period also saw "military Keynesianism" become a key driver of economic affairs. That is, weapons were not being produced solely in response to a changed strategic situation, nor even only for profit, but were in fact an essential economic cog (Johnson 2007). Several potential additions to the military–industrial complex have been raised over the years—including academia, think tanks, and the entertainment industry. Turse (2008, 16) describes it simply as "the complex," a shorthand for what he describes as the "military–industrial–technological–entertainment–academic–scientific–media–intelligence–homeland security–surveillance–national security–corporate complex."

The United States is an important case, as its economic and military size means it has considerable influence over global affairs. It is also important to look at the unique contextual features of other case studies, which will allow for a deep understanding of individual states, a capacity for comparison, and analysis of the interconnections between states. When it comes to the Australian case, using the terminology of MIAC makes the most sense. By MIAC, I mean the interconnected relationships between government, defense industry, and academia, which manifest in collaborations on military-related projects. These are the relationships being advocated for by the government, and the ones that have demonstrably changed since 2016. Australia serves as a useful example of some of the ways in which militarism is changing as the focus of western states has shifted away from the global war on terror and toward great power competition. It is an important and useful case to explore given that there are these clear changes that have taken place in recent years that can be traced to better understand the drivers of closer collaboration between government, defense industry, and academia. Further, Australia provides an interesting case in the context of developments in the relationship between domestic economic affairs and international politics such as US semiconductor competition with China, and the stated goal of the AUKUS states to deepen defense industrial base integration. Analyzing the development of the Australian MIAC will provide a case upon which to build comparative theorization in future research.

Australian Context

Before diving into the changes that have taken place since 2016, it is necessary to start first with the Australian context of neoliberalism, militarism, and defense policy. To begin with neoliberalism, we turn our attention to the 1980s. It was here that the government's Accord, an agreement struck between labor and business, paved the way for neoliberalism to filter through the cracks of the Australian economy and society (Humphrys 2018). When it came to universities, New Public Management strategies and marketization took root and began to spread, cemented by the 1980s' Dawkins Reforms (Croucher and Lacy 2022, 284). Since then, "Australian public universities have undergone a seemingly unending series of policy reforms premised on neoliberal ideologies" (Parker, Martin-Sardesai, and Guthrie 2021, 5). Further changes took place as higher education grew to be one of Australia's largest export industries from 2008 to 2019, resulting in an intensification of quality assessment systems and changes to funding models (Parker, Martin-Sardesai, and Guthrie 2021, 10).

Neoliberalism also made its mark on defense and defense industry. Globally, defense industry was consolidated into a handful of big defense primes, dominated by the United States (Amara and Franck 2021). Domestically, in the 1980s, "privatisation was generally considered the key reform of the government factories and dockyard" (Markowski, Bourke, and Wylie 2021, 464). The key trends dominating Australian defense industry have been described as commercialization, industrial self-reliance, "efficient and effective" defense procurement, and sovereign industrial capacity (Markowski, Bourke, and Wylie 2021, 463). Throughout these phases, there is a tension between desire for sovereign capability, self-reliance, and local jobs versus economies of scale, perceived defense requirements, and the high cost and risk of local builds. In the early 2000s, Australia took a more commercial approach to defense procurement, which, by the end of the 2010s, resulted in the dominance of foreign-controlled suppliers (Markowski, Bourke, and Wylie 2021, 467). The large defense primes established

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local subsidiaries and expanded through mergers and acquisitions of local Australian companies—most notably British Aerospace (BAE) Systems Australia (Markowski, Bourke, and Wylie 2021, 467).

However, in more recent years, there has also been a shift to build local defense industry in the name of sovereign industrial capacity, for economic and strategic reasons. In 2017, then Minister for Defence Industry Christopher Pyne announced the government's desire for Australia to become one of the top-ten defense exporters and released the first *Defence Export Strategy* (Australian Government 2018a). The export focus is required, the Minister argued, because the strong defense industry required to underpin "the largest renewal of Australia's defence capability since the Second World War" cannot subsist solely on the requirements of the Australian Defence Force (ADF; Australian Government 2018a, 4). Therefore, "new markets and opportunities to diversify are required" (Australian Government 2018a, 4). Doing so will "deliver strategic advantage and economic prosperity for Australia" (Australian Government 2018a, 19). A further example of the economic motivations of militarization lies in the 2016 announcement that twelve French-designed submarines would be built in South Australia, which was "not only intended to meet Australian defense requirements but also to reinvigorate Australian manufacturing" (Markowski, Bourke, and Wylie 2021, 469). Reinvigoration was particularly required in South Australian manufacturing, as it had been hardest hit by the collapse of the automotive industry (Markowski, Bourke, and Wylie 2021, 469). Here, there has been a pivot from automotive to defense industry, with defense industry able to scoop up skilled workers and some manufacturers able to pivot to defense industry (Defence Connect 2017; Russell 2019). The spirit of "military Keynesianism" is certainly alive in South Australia. The 2018 *Defence Industrial Capability Plan* announced its aim to strengthen Australia's defense industry based on identified sovereign industrial capability priorities (SICP), with evident dual economic–strategic motivations:

> Our defence industry is a critical national strategic asset for Australia. We must build a strong, sovereign naval shipbuilding and broader defence industry to manage strategic risk, defend our nation and grow our economy (Australian Government 2018b, 7).

There has clearly been a substantial and quite radical change to Australian defense industry policy, shaped by intertwined strategic and economic aims.

Markowski, Bourke, and Wylie (2021, 475) argue that there are four primary elements that will shape defense industry in the near-medium future: the *Defence Industry Policy Statement*, the *Naval Shipbuilding Plan*, the *Defence Industrial Capability Plan*, and the *Defence Export Strategy*. Since their writing, I would argue one should add two more elements. First, the element of AUKUS or, in other words, the aim of enhanced defense industrial base integration between Australia, the United States, and the United Kingdom (Australian Government 2021c). Second, the *Blueprint* and accompanying *Action Plan for Critical Technologies*. These documents identify that critical technologies are a space in which geostrategic competition is occurring, reflective of growing economic and strategic competition over technologies such as AI, quantum, and chips (Australian Government 2021a, 3; Australian Government 2021b). They also point to cooperation with allies and partners via AUKUS and the Quad on developing "critical technologies that reflect our values and will benefit our people" (Australian Government 2021a, 3). The documents list critical technologies of key importance, which points to funding priorities. Given the nature of many of the technologies as dual-use—for instance, robotics and autonomous systems—this focus on technology competition influences the direction of defense industry funding and priorities.

It is not only changes in the economic climate that affect defense and defense industry, but a shifting strategic environment and, crucially, how that environment is being perceived. In 2020, Australia produced a new Strategic Update given that "Australia's strategic environment has deteriorated more rapidly than anticipated" since the previous Defence White Paper (Australian Government 2020a). The key changes identified in the *Update* are faster military modernization in the Indo-Pacific, "new weapons that challenge Australia's military edge," improved cyber capabilities and use of those capabilities, "major power competition," and "grey zone" activities, including "militarisation of the South China Sea," disinformation, and economic coercion (Australian Government 2020a, 5). The Update argues that it is "strategic competition, primarily between the United States and China, [that] will be the principal driver of strategic dynamics in our region" (Australian Government 2020a, 11). Of key concern is the belief that "the prospect of high-intensity conflict in the Indo-Pacific, while still unlikely, is less remote than in the past" (Australian Government 2020a, 5). Given the changes, the Update argues that Defense can no longer assume "a ten-year strategic warning time for a major conventional attack against Australia," and so the government must be "willing" and "able" "to deploy military power to shape our environment, deter actions against our interests and, when required, respond with military force" (Australian Government 2020a, 6). These concerns were reinforced

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in the 2023 *Defence Strategic Update*, which argued that "due to the significant changes in Australia's strategic circumstances . . . the ADF as currently constituted and equipped is not fully fit for purpose" (Australian Government 2023, 7). The ways in which Australia views its "deteriorating" strategic environment is a significant driver of the growing closeness between defense, industry, and academia.

Defense

One of the key factors bringing together industry, academia, and defense is the changing nature of the Defence Science Technology Group (DSTG) under the leadership of first Alex Zelinsky and second Tanya Monro. Zelinsky was instrumental in the 2016 shake-up of defense industry, which saw the creation of the Next Generation Technology Fund (NGTF) and the Defence Innovation Hub (Bolton 2019). On Zelinsky, Bolton (2019) argues that "it was under his watch at DST that the Department of Defence opened the doors to the higher education sector." Zelinsky recognized that while Defense had not normally seen much potential in universities, there was expertise available that they could tap into. Notably, Zelinsky was also keen to push closer relationships between defense and local industry, describing the new relationship as "much more a partner-collaborator model than a buyer–contractor model" (Zelinsky 2017). Upon leaving his role at DSTG, Zelinsky took on the role of Vice Chancellor at Newcastle University. His successor as Chief Scientist at DSTG, Tanya Monro, took over the mission of bringing universities and defense together with gusto. In the reverse of Zelinsky, Monro came to the role at DSTG from a university background and, likewise, believed that defense and academia could do "More, Together." Her university sector background meant she came to the role "very much aware of the substantial contribution universities can make to Defence and Defence capability" (Defence Science Technology Group 2020a). The *More, Together: Defence Science and Technology Strategy 2030* was launched in May 2020 (Australian Government 2020c). It outlined DSTG's view of its need to step up and coordinate "a national S&T [science and technology] enterprise," comprising of publicly funded research agencies, universities, large defense primes, SMEs, and entrepreneurs (Australian Government 2020c, 2). Previously, defense R&D was focused on R&D taking place at DSTG. Now, the aim was to expand R&D to involve industry and academia (Markowski, Bourke, and Wylie 2021, 478). These changes stem from the belief that both the strategic environment and the technological development are changing at an ever more rapid pace (Australian Government 2020c, 6). Responding requires both more S&T capacity and "a well connected, informed and vibrant defence S&T enterprise" (Australian Government 2020c, 7). These changes will, the strategy argues, ensure that "good ideas will become Defence capabilities in a timeframe that matches the rapid rate of technological change" (Australian Government 2020c, 11).

In order to achieve this translation from R&D to capability faster, the *More, Together* strategy provides a list of eight broad-ranging problem areas of focus, or "STaR Shots" (Science, Technology, and Research Shots) (Australian Government 2020c, 14–5). Highlighting these problems, Monro argues, creates "space for disruption," which can generate solutions via collaboration between defense, industry, and academia (Barrett 2021). For Monro, "the overall ambition is to improve that alignment between what the nation does and what Australia needs from a defence and national security perspective" (Barrett 2021). Universities and researchers are seen as such a resource that the *Defence Transformation Strategy* points to the impacts of COVID-19 on universities as giving defense "an opportunity to position defence research as a long-term business proposition to attract and retain experience and corporate knowledge" (Australian Government 2020b, 4). All in all, these changes in the aims and means of defense R&D are substantial, and they are having a significant impact on the relationship between industry, defense, and academia.

The expansion of collaboration between industry, academia, and defense is also being driven at the state level. Defence Victoria highlights on its website that universities comprise a core component of their defense R&D capability, arguing that "Victoria's educational institutions have world-class defence research capabilities" (Victorian State Government 2022). Victorian universities, they emphasize, "contribute 40 percent—around $61 million—of Australia's annual university defence research and development spend," the most of any state (Victorian State Government 2022). Further, Victorian-based Deakin University is the first university in Australia to host Zone 4 classified secret-rated defense research. Defence Victoria also draws attention to their "industry leaders in defence R&D," including the presence of big primes such as Lockheed Martin Australia and BAE Systems Australia, and local Victorian companies, including Systems, Projects, and Quality (SYPAQ) Systems (Victorian State Government 2022). Defence SA (2020, 4) is similarly focused on bringing together industry, academia, and defense, seeking to enhance its role as "The Defence State." In terms of industry, the Defence SA *State Sector Plan 2030* boasts that seven of the top ten

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global defense companies "call South Australia home" (Defence SA 2020, 9). South Australia, it argues, "has a long history of success in defence research, underpinned by strong education and industry alliances" (Defence SA 2020, 9). The Plan identifies research, development, and innovation as a priority area of growth, with the underlying aim to "grow collaborative research activity across universities, industry and government" (Defence SA 2020, 16). Queensland similarly aims to grow its defense industry capabilities through building these MIAC relationships to support both the ADF and Queensland's economy (Queensland Government 2022).

The same themes come through in the NSW, Tasmanian, and WA equivalents (NSW Government 2017; State of Tasmania 2017; Government of Western Australia 2020). Each state boasts of their defense presence, the size of their defense industry, the quality of their tertiary institutions, and the ways in which they are bringing these different groups together to innovate. The states are each competing within the federal system for increased investment from the federal government and from industry players. The Tasmanian plan, for instance, argues regarding the planned increase in Australia's investment in defense capability that "Tasmania must not miss out on this vital opportunity" (State of Tasmania 2017, 2). "Staking our claim in the defence supply sector," the plan argues, "has the potential to bring tens-of-millions of dollars into our economy and create thousands of jobs across the state" (State of Tasmania 2017, 2). In the process of competing for resources, the states are reinforcing the aims of the federal government and defense in bringing together industry, academia, and defense, to achieve both military and economic gains.

Defense Industry

Defense industry is seeking closer relationships with academia and government, contributing to the strengthening of the triangular relationship between the three. The interest in these relationships is evident in statements from senior industry figures, and the types of projects they are pursuing. One example is BAE Systems Maritime Australia's partnership with Flinders University, the South Australian government, and the federal government to build The Factory of the Future at Flinders' Tonsley Innovation Precinct. The project is designed to "accelerate the growth of high value manufacturing industry and jobs," and support Australia's defense exports (BAE Systems Maritime Australia, Flinders University, and Government of South Australia 2022, 2). It brings together civilian and defense industry, government, defense, and academia. From the perspective of defense industry, Managing Director of BAE Systems Maritime Australia, Craig Lockhart, outlines his vision:

> The Factory of the Future will be placed right at the heart of developing sovereign industrial capability. . . we're bridging the gap between industry, smaller businesses and academia, and we're looking to get that accelerator effect (BAE Systems Maritime Australia et al. 2022, 10).

His comment demonstrates the interest defense industry has in strengthening defense–industry–academia connections.

The Australian arm of Elbit Systems shows similar interest, with Managing Director Paul McLachlan proudly outlining their collaborations with the Victorian government, universities, SMEs, and defense industry. McLachlan makes it clear that the "partnerships" it has formed with universities have "enabled the company's defence technology to remain cutting edge" (Defence Connect 2021). BAE Systems (2022) Australia CEO, Ben Hudson, stated in celebration of a new partnership that "bringing together the collective capabilities of industry, academia and the defence not only advances innovation, but it also supports the economy, generating new local jobs and potential defence exports." Northrop Grumman (2022) describes their role as "building sovereign capability; backing home-grown innovation, partnering with small to medium enterprises and academia, and investing in Australia's future." Working with academic and industry partners allows them to improve supply chains and develop "genuine sovereign capabilities in Australia," with the hope that "academic engagements" and "Australian industry innovation can be leveraged into Northrop Grumman products" (Northrop Grumman 2022). Thales (2022) Australia describes their partnerships with academia and other experts as the "core" of their capabilities. These comments all outline the value that large defense primes see in collaborating with Australian industry and academia, as sources of additional R&D capacity, resources, and, ultimately, profits.

Academia

There are several means through which the defense-related changes in the tertiary sector can be seen: funding from defense contracts, marketing on university websites, and the development of university defense research networks. To begin with funding, as in the 1950s–1960s United States, the proportion of research at universities being funded by defense has expanded dramatically in recent years. Figures 1 and 2 demonstrate the substantial growth in contracts awarded by the Department of De-

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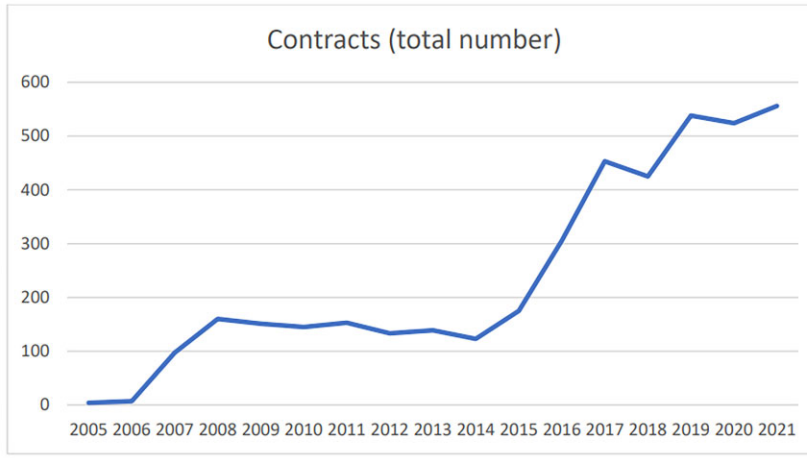

Figure 1. Total number of contracts provided by the Department of Defence to Australian Universities. *Source*: AusTender.

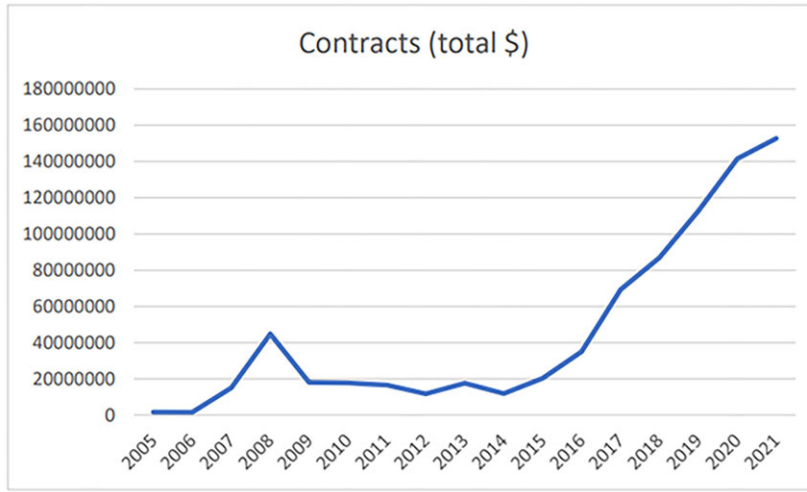

Figure 2. Total expenditure on contracts provided by the Department of Defence to Australian universities. *Source*: AusTender.

fence to Australian universities. Figure 1 shows the number of contracts, whereas figure 2 shows the total spend on contracts. For figure 2, the two largest outliers have been removed—both very large contracts going to the Australian Defence Force Academy (ADFA) at the University of New South Wales (UNSW), one in 2010 and the other in 2019.

In 2021 compared to 2014, more than four times the number of contracts were issued, and there was a roughly eight-fold increase in the amount of money allocated. The results were compiled using AusTender (Australian Government 2022b) by searching for "university" with the Department of Defence as the provider from 2005 to 2021, as per the contract start date. This is an imperfect process, as it may miss contracts where the word "university" did not appear due to abbreviations or misspellings. The data had to be cleaned to remove contracts that were not in fact for a university but contained an unrelated mention of the word university. Contracts to foreign universities were also removed. Despite these qualifications, the substantial upward trend since 2016 paints a reasonably clear picture of change, demonstrating the concerted investment in the relationship between defense and academia.

Alongside an increase in funding, there has been an expansion of defense research networks. These are state-

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Table 1. State defense research networks

Name	Location	Date formed	University members
Defence Science Institute (DSI)	Tasmania and Victoria	2011	ACU, Deakin, Federation, Melbourne, Monash, RMIT, UTAS, Victoria, Swinburne
Defence Innovation Network (DIN)	NSW and ACT	2017	ANU, University of Sydney, UTS, UNSW, Macquarie, Wollongong, Newcastle, WSU
Defence Innovation Partnership (DIP)	SA and NT	2018	UniSA, Flinders, University of Adelaide
Defence Science Centre (DSC)	WA	2019	Curtin, Edith Cowan, Murdoch, UWA
Queensland Defence Science Alliance (QDSA)	Queensland	2021	UQ, Griffith, QUT, USQ, USC, James Cook, CQU

Source: Defence Science Institute (2019); Queensland Defence Science Alliance (2021); Defence Innovation Network (2022); Defence Innovation Partnership (2022); Government of Western Australia (2022); and Defence Science Technology Group (2022a).

based networks, which are collectively coordinated by the Australian Defence Science and Universities Network (ADSUN). It is through ADSUN that "DSTG facilitates Defence engagement and cooperation with the national innovation ecosystem" (Defence Science Technology Group 2022b). While not solely university-based, universities comprise a significant portion of activity in the networks. Table 1 lists the various state-based networks, when they were formed, and their member universities.

These networks exist to, as it says in the name, network. They bring universities, defense, and industry together, facilitating cooperation and collaboration. The Defence Innovation Network (DIN) describes its function as being "a virtual front door for defence industry to connect with NSW universities" (Defence Innovation Network 2022). Queensland Defence Science Alliance "connects universities, industry, innovation hubs and precincts, State and Federal government organisations and Defence" (Queensland Defence Science Alliance 2021, 1). They also note their intention for these networks to result in "other opportunities and dual use technology" such as agricultural and mining technology (Queensland Defence Science Alliance 2021, 3). The networks bring together a fusion of the aims of both universities and state governments to grow their share of government and industry defense funding, and the government aims to expand partnerships between the groups. The Defence Science Institute (DSI) outlines that "the DSI acts on behalf of Victorian universities to help them grow their contribution to defence research," as supported by the Victorian government and DSTG (Defence Science Institute 2019). WA universities, meanwhile, are taking a "unique" team approach, and working together to "provide the state with a significant advantage in the engagement of resources supporting the current and future needs of the defence sector" (Constantinides 2021). To make collaboration between universities and defense more practical, every public university in Australia has also signed onto the Defence Science Partnerships Program (DSP). The DSP "provides a common pre-agreed framework under which Australian universities can work with Defence" (Defence Science Technology Group 2022b). The expansion of these networks, and the changes to the contracting process, means that there are more opportunities to bring universities and defense into collaboration, and the process of doing so is easier to put into practice.

As is likely already evident, universities are extremely active in this changing ecosystem in promoting themselves as a valuable defense investment. This is visible on university websites, in statements made by senior university figures, and in statements made by university bodies such as Universities Australia (UA) and the Group of Eight (Go8). Several universities have brochures in which they promote their defense research capabilities. UNSW (2019, 2) emphasizes their "excellence in defence research and technology." They list defense research and technology as one of the seven research areas of focus for the university (UNSW 2022). The University of Adelaide (2022) has a list of industry-engagement priorities, of which defense, cyber, and space is one of the five priorities, in which they claim that their "world-class researchers develop innovative technologies that give the Australian Defence Force a real edge." The University of Western Australia (UWA), the University of Melbourne, and the University of South Australia (UniSA) are similarly proud in outlining their defense research commitment and defense industry engagement (University of Melbourne 2022; University of South Australia 2022a; UWA Defence & Security 2022a). Of course, defense is not the only industry priority listed by universities. Further research will be required to gauge a better understanding of whether defense is simply one part of an in-

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creased focus on industry engagement, or whether it is being disproportionately pursued compared to other industries. Further, many other priorities, such as mining, contain opportunities for dual-use developments that are difficult to disentangle. While defense is not the only priority, it is frequently one of only a small handful of priorities for universities in terms of both government and industry funding.

Further evidence of this lies in the creation of defense-related degrees and projects. The University of South Australia (2022b) has launched a new Global Executive MBA in Defence and Space, which aims to "build a pipeline of talent across Australia, the United States, the United Kingdom and other allies" through "leveraging. . . the recent AUKUS strategic alliance." This endeavor is particularly illustrative of universities' active exploitation of the opportunities to acquire funds created by government priorities and geopolitical events. Meanwhile, Flinders University (2022), in their creation of The Factory of the Future, goes further than merely supporting defense capability, and proudly announces that their "bold vision" and "fearless ambition . . . will place Australia as a top 10 global defence exporter." These examples demonstrate that universities are actively promoting their "defence capabilities" to government and industry partners, highlighting their commitment to improving Australia's defense capabilities and, in some cases, Australia's alliances, partnerships, and defense exports as well.

Alongside brochures, Vice Chancellors (VCs) are not shy in advertising their university's capabilities to potential industry and government partners. The VC of UWA, Amit Chakma, describes defense research as "UWA's contribution to the defence needs of our country" (Constantinides 2021). The VC of Edith Curtin University (ECU), Steve Chapman, has stated that ECU will "deliver research and innovation outcomes that build sovereign capability" (McKenzie 2017). The Deputy VC of UNSW, Les Field, has argued that "the ADF can only maintain a technological edge over any likely adversary by investing in UNSW and other tertiary institutions" (Edney-Browne 2017). The VC of the University of Adelaide, Peter Høj, has argued that the university "will apply its research expertise in defence-relevant areas . . . to help improve Australia's sovereign capability" (Dodd 2022). Michael Webb (2022), Director of the Defence and Security Institute at the University of Adelaide, outlines how they will use their "collective R&D skills to provide the asymmetry that the ADF needs in our worsening geopolitical circumstances and deliver impact at scale." Returning to economic motivations, they also aim to help "create a robust, resilient industry sector to underpin Defence and act as a pillar for a stronger national economy" (Webb 2022). These senior university figures are overt in their celebration of what their universities contribute to Australia's defense capabilities. They are active geopolitical actors, seeking to shape Australia's defense posture and contribute to the creation and perpetuation of great power competition. That they are so comfortable positioning their universities as military capabilities demonstrates the extent to which higher education has been militarized in Australia.

A further example of universities' appetite for defense-related funding lies in their opportunistic response to Australia's desire to acquire nuclear-powered submarines. A key difficulty in enacting the plan is Australia's lack of a relevant skilled workforce. This skills shortage, naturally, opens opportunities for universities to provide skills training. Zelinsky claims that university training is needed to provide the nuclear specialists who will be required in industry and the Navy (Dodd 2021). Go8 Chief Executive Vicki Thomson responded by pointing out that "G08 universities have significant defence capability" and were therefore able to "play a major role in the development of the nuclear submarine capability" (Group of Eight Australia 2021). ANU VC Brian Schmidt is pushing for urgent action to ensure Australia produces the graduates required to see the nuclear-powered submarine acquisition succeed, campaigning for the government to build a "national nuclear enterprise" through making "nuclear stewardship" an SICP, to create career pathways for school students, and change university funding rules to make such research easier to conduct (Greene 2022). Schmidt argues that in order for Australia to develop a "sovereign capability to operate and maintain the fleet," there must be "integration of military, industry, government and academia to create an entirely new sector of the economy" (Greene 2022). Universities are hungry for defense-related funding from the government and industry and are deploying various means to advertise their capabilities to potential funders. In doing so, they are a primary player in the construction of the MIAC.

The advocacy of collective bodies representing universities for defense-related investment in universities demonstrates the increasingly central role universities are taking on in the militarized state. UA, the peak body for Australian universities, made a public submission to the 2022 Defence Strategic Review. The fact that they felt compelled to do so is already an interesting story in and of itself. The content of the submission tells yet more interesting tales. The primary aim of the submission is to demonstrate that "Australia's universities are positioned to work with Defence . . . in the national

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interest," emphasizing the role universities have played in defense R&D, in training the defense workforce, in contributing to national security, and in "shaping Australia's strategic environment" through soft diplomacy (Universities Australia 2022). UA Chief Executive Catriona Jackson (2022) argues that universities are central to "building our defence capability and the success of security pacts, such as the AUKUS and Quad arrangements." Jackson (2022) assures defense, who are struggling with a "skills crisis" in the midst of "geopolitical volatility," that "Australia's world-class universities are here to help." Interestingly, in their 2016 publication on partnering with universities, there is no explicit sales pitch to defense industry (Universities Australia 2016). Mining, big tech, biotech, agriculture, energy, yes—but defense industry is notably absent. Even where companies such as Boeing are mentioned, there is no focus on defense outputs. This absence, compared to UA's submission to the Defence Strategic Review, demonstrates how substantially and how quickly the industry–academia–defense collaborative environment has changed. The Go8 submission is even more striking in its militarism, arguing that "harnessing the capacity of our high performing, research intensive universities is an urgent national strategic imperative," and Australian universities must work with industry and government and assist in "sustaining a competitive advantage for our ADF operators" (Group of Eight Australia 2022). Go8 universities are all "pivoting towards the defence research value proposition with the aim of generating social impact in the national interest" (Group of Eight Australia 2022). These university bodies are actively and aggressively vying for their share of the pie in whatever results from the Defence Strategic Review. They want the government to see universities as essential to Australia's defense capabilities, national security, and national interests. In doing so, they help build Australia's emergent MIAC.

Ideals of Innovation

Each member of the MIAC has extolled the virtues and necessities of innovation. Concepts of innovation and the entrepreneurial spirit, springing from the neoliberal well and Silicon Valley ideals, are driving R&D in industry, academia, and defense, and, crucially, bringing the three together. The state-based defense research networks, for instance, are "research and innovation" networks—indeed, two have innovation in their very names (the SA Defence Innovation Partnership and the NSW DIN). They focus on creating an "agile innovation system" for defense purposes (Defence Science Technology Group 2022b). Industry must innovate for profit. Academia must innovate to acquire funding. The defense must innovate to achieve a military advantage. As circumstances and government policy have changed in recent years, increasingly each is turning to the other in order to achieve these aims. Zelinsky (2017) describes Australia's defense SMEs as "powered by innovative ideas and an enterprising spirit." Former Prime Minister Scott Morrison (2021) outlined his desire to get universities to "shift incentives towards high value commercial opportunities, to industry needs and national priorities" and away from the "publish or perish mindset . . .[which]. . . does little to spur innovation or create start-ups." One result of these ideals is the establishment of innovation hubs or precincts. DSTG is encouraging research ventures where the three groups, alongside international researchers, can be collocated (Sciacca and Manzie 2022).

Flinders' Factory of the Future is one such space. The Tonsley Innovation District (2016) in which it is housed is another. Also in South Australia is Lot Fourteen (2022b)—which describes itself as "defined by innovation" and "powered by collaboration." It is not solely defense-related, but defense is one of the four focus sectors brought together in "an ecosystem that delivers collaboration and partnerships between enterprises, universities and research organisations," forming "an integral part of South Australia's innovation ecosystem" (Lot Fourteen 2022a). Lockheed Martin (2022) set up its first multi-disciplinary R&D facility outside the United States in Melbourne in 2016, in collaboration with Melbourne University. Named STELaRLab (Science, Technology, Engineering Leadership & Research Laboratory), the facility is designed to bring industry and academia together to produce defense-related R&D, on areas including hypersonics, robotics, and artificial intelligence (AI) (University of Melbourne 2016). UNSW Canberra (2022b) announced a new "collaborative workspace bringing together industry, government and university to grow innovation and capability in defence and security" in 2019 called Launch on Northbourne. It is intended to be "a new model for collaborative innovation in defense and security" (UNSW Canberra 2022a). Another model bringing together the three groups in this way is the first-ever defense cooperative research center: the Trusted Autonomous Systems Defence Cooperative Research Centre. A government initiative, established under the NGTF, the center aims to bring together defense industry, research organizations, defense, and universities to research and develop technologies and policies related to autonomous systems (TASDCRC 2022). In the words of the Initial Chair, Jim McDowell, their "focus . . . will be industry led projects with real translation opportunities to move technology rapidly from universities into in-

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dustry and ultimately into leading edge capability for the Australian Defence Force" (TASDCRC 2022). In all their different forms, these innovation hubs/precincts/centers bring together industry, defense, and academia, with the explicit goal of collaborating to achieve innovative results that are, to varying degrees, for defense purposes. The ideals of innovation and entrepreneurship are a core driver of collaboration.

Another government initiative, stemming this time from education rather than a defense perspective, is the Trailblazer Universities Program intended to "build new research capabilities, drive commercialisation outcomes and invest in new industry engagement opportunities" (Australian Government 2022a). One of the successful bids for the funding is the *Defence Trailblazer: Concept to Sovereign Capability* (CSC) bid led by the University of Adelaide, partnered with UNSW. It involves a government input of $50 million, matched by the two universities, and $140 million to be invested by more than 50 industry partners, of which 80 percent are Australian-based SMEs (Farrell 2022). This project is a substantial indication of the changes that have occurred in the industry–academia–defense relationship to date, and those still to come. In the words of Christine Zeitz, General Manager Asia Pacific of Northrop Grumman and CSC Chair Designate:

> The Defence Trailblazer will transform the nature of the relationship between the academic sector, defence industry and the Department of Defence, compelling universities to pivot outwards towards entrepreneurial and commercial outcomes-driven collaboration. Our policies, processes, services, workforce incentives and rewards will be realigned to this new approach (Farrell 2022).

This project is very much the embodiment of the changes since 2016 which have seen a rapidly emergent MIAC increasingly dominate the Australian landscape. Of particular note is the undercurrent of "military Keynesianism." The University of Adelaide's VC, Peter Høj, stated that "the University of Adelaide is proud . . . to assist the country's economic recovery" (Farrell 2022). The project is estimated to provide a $1.5 billion net benefit to the Australian economy over ten years, including the provision of 2,500 jobs over four years, and provide military and civilian technologies that "will be of significant benefit to the Australian economy and assist in its post-pandemic recovery" (Farrell 2022). The project aims to "create a step change in the Australian defence innovation culture," allowing industry and academia to "support Defence's pull-through of leading-edge capabilities, including dual-use technologies, to sustain the ability of the Australian Defence Force (ADF) to defend national security interests in a highly volatile geo-strategic environment" (Farrell 2022). The military and economic aims of the project reinforce one another, with ideas of innovation, entrepreneurship, and an increasingly fused industry–academia–defense relationship driving successful outcomes for both aims.

Reflections: On the Effects of an Expanding MIAC

Australia has an emergent and expanding MIAC. Why does this matter? Here, I will focus on three reflections in response to this question. First, what it tells us about Australia's strategic outlook; second, what it means for higher education; and third, a reflection on the relationship between the political economy of security, alliance relationships, and new and emerging technologies. To begin with the strategic questions, the nature of Australia's MIAC and the motivations driving it reveal a lack of strategic imagination. Australia's militarization, driven in large part by the MIAC, contributes to regional tensions and fuels the very great power competition it claims to be responding to. Great power competition is not only dangerous for security and peace, but also corrosive to democracy (Brenes and Jackson 2022). The MIAC lacks a strategic rationale, driven instead by a patchwork of complementary and competing economic and strategic interests, which do not bring identified problems, solutions, and desired achievable outcomes together in any meaningful way (for background on Australia's strategic deficit, see Jackson 2022). What else stands out in strategic terms is the element of military Keynesianism found in Australia's approach, in which defense spending is intended to be a key driver of economic development—this is true through the desire to increase defense exports, to reinvigorate Australian manufacturing, and to grow local industry. However, if defense spending is seen to be an important component of economic recovery and rejuvenation, then defense spending must continue to be justified, and these justifications will not necessarily be linked to strategic circumstances or desired strategic outcomes.

The impact of an expanding MIAC on universities is significant. Many have raised concerns about the ethical implications of the militarization of universities, given the kinds of military operations and weapons use that research has supported (Edney Browne and Ruff 2018). Here I will focus on only one concern: the effects on academic freedom. Military funding naturally influences the direction of research, and the more defense fund-

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ing dominates the options for funding sources as academics are facing ever-growing pressure to obtain funding, the greater the influence (Edney-Browne and Ruff 2018). Similar arguments have been made regarding big tech. Whittaker argues that the dominance of big tech companies over data and computational resources gives them power and influence over the direction of the AI research undertaken in universities. However, she argues:

> This doesn't mean that researchers within these domains are compromised. Neither does it mean that there aren't research directions that can elude such dependencies. It does mean, however, that the questions and incentives that animate the field are not always individual researchers' to decide. And that the terms of the field—including which questions are deemed worth answering, and which answers will result in grants, awards, and tenure—are inordinately shaped by the corporate turn to resource-intensive AI, and the tech-industry incentives propelling it (Whittaker 2021, 52).

This argument is also true, albeit to a lesser extent, of defense-funded research. Richardson (2022) analyzes these issues in the context of the use of "ethics" to align defense and academic priorities, and acquire research funding. It is not that defense or defense industry-funded research is inherently bad, nor the research suspect, but that the very question of what research ever gets done in the first place is unduly determined by defense priorities. Research becomes prematurely aligned with defense priorities, hollowing out the scope for inquiry, debate, and critique. For example, in the defense capability brochures and university websites, their lists of capabilities tend to mirror stated defense priorities. Trusted autonomous systems are an identified defense priority (for an overview, see Troath 2022), and that exact language is used by multiple universities in advertising their selling points to potential defense funders (e.g., The University of Adelaide 2019; University of Melbourne 2022; UNSW 2022, 6). The same level of dependencies as exist with big tech are not there—yet. However, the greater the level of dependency is allowed to become, the greater the risk to academic freedom. There is indeed a risk that government and industry contacts become "a substitute for intellectual curiosity," as Eisenhower (1961) argued.

The MIAC is a useful analytical tool through which to explore key aspects of the political economy of security. The Australian case, particularly when it comes to the goal of defense industrial base integration with the United States and the United Kingdom in the context of AUKUS, raises interesting questions about the connections between the political economy of security and alliances and partnerships—even more so when you also consider the dual-use nature of many new and emerging technologies. The influence of military priorities on the civilian economy is not new (for a historical account, see Buzan and Sen 1990); however, the expanded scale of dual-use opportunities in areas such as AI, autonomous systems, and robotics impacts upon these processes. Perhaps nothing is more evident of this than the US Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act, which sought to boost the US semiconductor industry and curb the sale of relevant technologies to China. For the United States, this move is explicitly about both domestic supply chains and job creation, as well as geopolitical rivalry (The White House 2022). Meanwhile, the success of AUKUS—in terms of both nuclear-powered submarines and broader technology sharing—is heavily reliant on Australia, the United States, and the United Kingdom integrating their defense industrial bases. This move would bring the domestic economy of the three states, and the political economy of security for each, much closer together. Connections between domestic manufacturing, jobs, defense and civilian industries, alliances, and strategic competition may not be new, but they are certainly heightened. Understanding the domestic drivers in relevant states, and the relationship between those domestic drivers, militarism, strategy, and interstate relations, will be essential to analyzing strategic affairs.

Conclusion

In this article, I have demonstrated that Australia has an emergent, and rapidly growing, MIAC. Its emergence is driven by dual economic and strategic motivations from each of the actors involved, and is energized by ideals of innovation and the entrepreneurial spirit. In the Australian case, the expansion of an MIAC has been encouraged by the effects of neoliberalism on government, defense industry, and academia; intensified strategic competition; government interest in changing defense industry policy, increasing defense exports, and the associated desire to rebuild domestic manufacturing; and the motivations of key individuals. Whether each of these features is required for closer ties to develop between the three groups in other states will require further comparative research.

In Australia, it has been demonstrated here that military, industry, and academia each need one another—for military advantage, for profits, and for survival. However, the growing closeness of these relationships raises several concerns about the impact the MIAC has on the role of the university in society, the extent of Australia's milita-

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rization, and the connection between Australia's MIAC, its alliances and partnerships, and strategic competition. The developments in Australia's MIAC have the potential to undermine academic freedom and alter the role of the university in society, particularly should research funding reliance on defense and defense industry contracts increase. Militarization is being driven by both economic and strategic motivations. The economic motivations are not strategy and, somewhat ironically, the strategic motivations are not particularly strategic either. Further, the nature of Australia's militarization, underpinned by an expanding MIAC, has implications for its engagement with alliances and partners. The combination of new and emerging technologies with expanded scope for dual-use applications, US–China strategic rivalry, and the goals of defense industrial base integration by the AUKUS states brings the political economy of security to the forefront.

The demonstrable changes in Australia's militarization since 2016, driven by the growing closeness of the triangular relationship between industry, academic, and defense, are substantial and should prompt further study and debate. To echo Richardson's (2022, 134–5) call, critical academics should undertake a "forensic" examination of the money involved in Australia's militarization. This article begins that project, but there is much more to be done. We must be attuned to the developments in the military–industrial complex and their effects on defense, strategy, economy, society, and higher education. It is essential to incorporate an examination of the dynamics of the MIAC into the analysis of militarism, militarization, and strategic policy in Australia.

Acknowledgments

The author would like to thank Geoff Ford, Jeremy Moses, and Maryanne Kelton for their time and thoughtful comments, as well as Mark Salter for his generous advice, which greatly improved the article.

Funding

This work was supported by the Royal Society Te Apārangi under grant number 19-UOC-068.

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Troath, Sian (2023) The Political Economy of Australian Militarism: On the Emergent Military–Industrial–Academic Complex. *Journal of Global Security Studies*, https://doi.org/10.1093/jogss/ogad018

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